

What is claimed is:

1. A method of determining interleaver parameters  $m$  and  $J$  according to an interleaver size  $N$  to sequentially store input data in a memory having a row×column matrix structure and partial-bit reversal order (P-BRO) interleaving the stored data, the parameters  $N$ ,  $m$ ,  $J$ , and  $R$  being expressed as  $N=2^m \times J + R$  ( $0 \leq R < 2^m$ ), the method comprising:

calculating a first variable  $\alpha$  by  $(\log_2 N - \lfloor \log_2 N \rfloor)$  and a second variable  $\beta$  by  $(2^{\lfloor \log_2 N \rfloor})$ ;

comparing the first variable with a selected first threshold;

comparing the second variable with at least one predetermined second threshold;

determining a first parameter  $J$  according to the comparison results; and

determining a second parameter  $m$  by  $\left\lfloor \log_2 \left( \frac{N}{J} \right) \right\rfloor$ .

2. The method of claim 1, wherein the first parameter  $J$  is determined according to the following Equation.

If  $\log_2 N - \lfloor \log_2 N \rfloor < \log_2 3 - 1 = 0.5849625$ ,

$$\text{For } \left(\frac{3}{4}\right) \cdot 2^{\lfloor \log_2 N \rfloor} \leq N < 1 \cdot 2^{\lfloor \log_2 N \rfloor}, \quad J = 3,$$

$$\text{For } 1 \cdot 2^{\lfloor \log_2 N \rfloor} \leq N < \left(\frac{3}{2}\right) \cdot 2^{\lfloor \log_2 N \rfloor}, \quad J = 2,$$

$$\text{For } \left(\frac{3}{2}\right) \cdot 2^{\lfloor \log_2 N \rfloor} \leq N < 2 \cdot 2^{\lfloor \log_2 N \rfloor}, \quad J = 1.$$

Else if  $\log_2 N - \lfloor \log_2 N \rfloor \geq \log_2 3 - 1 = 0.5849625$ ,

$$\text{For } 1 \cdot 2^{\lfloor \log_2 N \rfloor} \leq N < \left(\frac{3}{2}\right) \cdot 2^{\lfloor \log_2 N \rfloor}, \quad J = 2,$$

$$\text{For } \left(\frac{3}{2}\right) \cdot 2^{\lfloor \log_2 N \rfloor} \leq N < \left(\frac{7}{4}\right) \cdot 2^{\lfloor \log_2 N \rfloor}, \quad J = 3,$$

$$\text{For } \left(\frac{7}{4}\right) \cdot 2^{\lfloor \log_2 N \rfloor} \leq N < 2 \cdot 2^{\lfloor \log_2 N \rfloor}, \quad J = 1.$$

3. The method of claim 2, wherein the parameters N, m, J, and R are determined to be

N	m	J	R
408	7	4	24
792	8	4	24
1560	9	4	24
2328	10	3	280
3096	10	4	24
3864	11	2	1816

4. An interleaver in a communication system, comprising:

a memory having a row×column matrix; and

an address generator adapted to partial-bit reversal order (P-BRO)

interleave addresses of the memory, calculate a first variable  $\alpha$  by  $(\log_2 N - \lfloor \log_2 N \rfloor)$

using a given interleaver size N and a second variable  $\beta$  by  $(2^{\lfloor \log_2 N \rfloor})$ , compare the

first variable with a predetermined first threshold, compare the second variable with at

least one predetermined second threshold, determine a first parameter J according to

the comparison results, calculate a second parameter  $m$  by  $\left\lfloor \log_2\left(\frac{N}{J}\right) \right\rfloor$ , calculate a third parameter  $R$  by  $N=2^m \times J + R$ , sequentially arrange by columns an input data stream of size  $N$  in a matrix having  $2^m$  rows and  $J$  columns, and in  $R$  rows in a  $J$ th column ( $0 \leq R < 2^m$ ), P-BRO interleave the arranged data and generate read addresses for reading the interleaved data by rows.

5. The method of claim 4, wherein the parameters  $N$ ,  $m$ ,  $J$ , and  $R$  are determined to be

N	m	J	R
408	7	4	24
792	8	4	24
1560	9	4	24
2328	10	3	280
3096	10	4	24
3864	11	2	1816